FOUR WHEEL

ALL TERRAIN VEHICLE

TRAINING GUIDE

U.S. FISH AND WILDLIFE SERVICE

All Terrain Vehicle Training Guide

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1. Introduction. The All Terrain Vehicle (ATV) is motorcycle designed for access to environments otherwise accessible only by foot. ATVs come in 4 or more wheel models thus providing greater stability than other cycles, including trail bikes. The added wheels, in addition to cycle and wheel design which produce a low center of gravity, add greatly to the stability of operation.

Very few States license ATV operators since ATVs are designed exclusively for off-road use.

Basic operational skills are needed to operate ATVs, just as they are needed for all other Service motor vehicles. Service motor vehicle policy does apply to ATV operations. ATV operators must be qualified in accordance with 241 FW 2.13 and 321 FW 1.8.

Training for ATV operation includes: 1) a complete review of the owner's manual; 2) a review of the ATV Training Guide; and 3) successful completion of the "hands-on" exercises. As an alternative, prospective operators can successfully complete an operator's course developed by a manufacturer or other appropriate sources (e.g., ATV Safety Institute). **Operation of ATVs will be restricted to individuals possessing ATV training.**

The All Terrain Vehicle Training Guide has been prepared to assist Supervisors, either for initial or refresher training, to ensure that operators are properly trained and qualified to operate ATVs. The Guide contains a general description of ATVs, a listing of required personal protective equipment, operating procedures, riding tips, trouble shooting techniques, and pre-ride inspection information.

2. Authorized uses. The project leader or supervisor will authorize the use of ATVs in accordance with the following criteria:

(A) ATV use is restricted to accomplishment of official Service business by authorized personnel. They will be used for official purposes only and are not to be used for recreational activities either apart from or in conjunction with official purposes.

(B) ATVs will not be used to carry passengers unless the manufacturer's model is designed for transportation of both operator and passenger. If a passenger is carried, personal protective equipment required for the operator will also apply to the passenger.

(C) When not in operation, ATVs will be secured to prevent unauthorized use.

3. General description of all Terrain Vehicles. All terrain vehicles allow access to remote areas. The vehicle weights can typically range from 175 to 425 pounds. They are designed to traverse hills, trails, and streams. While ATVs are different from other vehicles, there are also differences from one ATV to another. For example, handling characteristics differ depending upon basic design and how the ATVs are equipped. Some ATVs have rear brakes, others have brakes front and rear. Some ATVs have electric starters, other have kick starters, and others have pull starters. There are water cooled and air cooled ATVs. Some transmissions have automatic clutches, others hand operated clutches, and some transmissions are fully automatic. A few ATVs have a reverse gear. Some have chain drives, and some have shaft drives. Some ATV throttles are controlled by twisting a hand grip, others by pushing a thumb lever next to the hand grip. In addition, at the present time there exists no standardization concerning controls and their locations on ATVs.

NOTE: The terms "ATC and "All Terrain Cycle" are registered trademarks of American Honda. Therefore, we have substituted the terms "ATV" and "All Terrain Vehicle."

4. Personal Protective equipment. All ATV operators and passengers on ATVs designed to carry passengers will wear the following when operating an ATV:

(A) A securely fastened motorcycle-type helmet that bears the Department of Transportation (DOT) label, the American National Standards Institute label (ANSI Z 90-1), or the Snell Memorial Foundation label.

(B) Eye protection, if the operator is not wearing a full face helmet. The eye protection should be shatterproof, securely fastened, and well ventilated to prevent fogging.

(C) Clothing to include gloves, and boots with heels to prevent the feet from slipping off the pegs.

5. Operating procedures.

(A) Starting.

(1) Ensure the transmission is in neutral.

(2) Set the parking brake.

(3) Turn the fuel valve on.

(4) Check to ensure the engine stop switch is in the Run or Stop position.

(5) If the engine is cold, put the CHOKE on the ON position.

(6) Start the engine.

(B) Initial movement.

(1) Ensure the engine is sufficiently warmed.

(2) When mounting, take care not to step on the shifter.

(3) Release the parking brake.

(4) Hold the rear brake and shift into first gear.

(5) Release the brake and slowly apply the clutch.

(6) In a vehicle with a manual clutch, release it slowly to avoid having the ATV wheel over backwards or lurch forward suddenly.

(7) Keep your feet on the footpegs to prevent injury.

(C) Running through the gears.

(1) Close the throttle before shifting.

(2) When traveling up a steep hill, downshift to prevent engine laboring. Shift quickly and smoothly to prevent lurching and wheeling.

(3) In an ATV equipped with a manual clutch, learn where the engagement point is to prevent stalling or over-revving the engine.

(D) Turning.

(1) The type of special turning skills required depends upon how the machine is designed, as explained in (2) and (3) below.

(2) ATVs with solid rear axles: Turn both wheels at the same speed.

(3) ATVs with differentials: Allow the rear wheels to turn at different speeds.

(E) Braking. Although techniques for braking will depend upon whether or not the vehicle has both a front and rear brake or rear brake only, some general tips apply.

(1) Always release the throttle when applying the brake.

(2) Downshift to allow the engine to slow the ATV before braking.

(3) Apply both brakes evenly.
(4) Avoid excessive braking while cornering.

(5) Apply brakes lightly on slippery surfaces.

(6) Shift to low gear when descending a hill. Do not ride the rear brake continually, but apply intermittently.

(F) Parking.

(1) Shift into neutral and set the parking brake, or shift into low gear if you don't have a parking brake.

(2) Avoid parking on an incline.

6. Basic riding tips. The following tips are provided for your information and application.

(A) Reading terrain.

(1) Be knowledgeable of the area you are riding in. Use existing trails and avoid dangerous slopes and impassable swamps.

(2) Read the trail as you ride to ensure awareness of what is ahead.

(B) Climbing a hill. In climbing a hill you should:

(1) Keep both feet firmly on the pegs.

(2) Shift into low gear and increase speed before ascending a hill.

(3) For small hills, shift your body weight forward by sliding forward on the seat.

(4) For steep hills, stand on the pegs and lean well over the front wheels in order to shift as much weight forward as possible.

(5) Shift quickly and smoothly if you must downshift to prevent stalling on a steep hill. Be sure to close the throttle to prevent wheelies.

(6) If you don't have sufficient power to continue uphill, but have forward momentum, turn around, and proceed downhill before you lose speed.

(7) If you are riding up a hill and you lose forward momentum, apply the parking brake **before** you roll backwards, and dismount to the left. Turn the handlebars fully to the left. As you stand on the uphill side, release the parking brake, and pump the handbrake to allow the ATV to roll backwards, this will turn the ATV sideways to the hill. **Reset the parking brake.** Turn the handlebars to the right. Remount the ATV on the uphill side while keeping as much of you weight as possible into the hill and ride downhill. This should work on most hills, but on a steep hill, remounting is extremely difficult. In this situation, concentrate on keeping as much weight uphill as possible . **Do not attempt to back down using the rear brake. This will cause the vehicle to roll over backwards.**

(8) In the same situation as above, when the vehicle is equipped with a front brake, you may be able to back down a small hill, of necessary, by shifting into neutral and using **only** the front brake and keeping your body weight uphill by leaning forward as much as possible. If the front brake does not slow your ATV, **dismount to the side immediately.** The front brake has little effect on steep hills.

(9) Always ride within the limits of your visibility. If you cannot see what is on the other side of the crest of a hill, slow down until you can get a clear view.

(C) Descending a hill. When descending a hill you should:

(1) Point the vehicle downhill.
(2) Transfer your weight to the rear.

(3) Shift the transmission into low gear and descend with the throttle closed.

(4) Apply the brakes to reduce speed.

(D) Traversing a slope. In traversing a slope you should:

(1) Lean uphill.

(2) When riding on soft terrain, gently turn your wheels slightly up hill to keep the vehicle on a straight line across the hill.

(3) If the vehicle begins to tip, turn the front wheels downhill and proceed downhill.

(E) Riding through water. Be sure you are familiar with the owner's manual to find the maximum safe water depth for your ATV. When riding through water you should:

(1) Never ford any stream with deep water since the tires may float and make it difficult to maintain control.

(2) Choose a course through a stream where both banks have a gradual incline. Try to cross at a known ford.

(3) Proceed at a slow, steady speed to allow observance of submerged obstacles and slippery rocks.

(4) After crossing, dry the brakes by applying light pressure to them while riding until they return to normal power.

(F) Cargo carriers and accessories. ATVs can come equipped with cargo carriers. The carriers can be either rear mounted or front mounted, and some models provide both a front and rear carrier. The carriers are designed to carry a certain load and this can vary with the individual manufacturer's design. It is important to know what design limit the manufacturer has placed on the equipment, and not to exceed that limit.

Manufacturers also offer other accessories such as trailer hitches that facilitate hauling. Some models currently on the market offer the capability to pull a load of up to 700 pounds using a standard trailer hitch. Again, the operator must remain within the design limit specified by the manufacturer.

While cargo carriers and accessories can increase the ability of the ATV to perform varied tasks, this increased ability requires increased knowledge and caution on the part of the operator. The operation of an ATV with cargo in the cargo carrier or the operation of an ATV in hauling a load affects the stability, and consequently the handling characteristics, of the ATV. It is essential that operators of the ATVs used for hauling cargo, either in a cargo carrier or in an attached trailer, receive appropriate "hands-on" training. The "hands-on" training exercises must include the use of an ATV equipped to either haul or carry cargo in a cargo holder. The operator must become proficient with the ATV in this mode prior to being certified to operate the ATV.

(G) Loading and unloading. As a general rule, ATVs should be loaded and unloaded from vehicles using either a ramp, a natural dirt band, or a low spot in the terrain. The ATV should not be lifted into the vehicle.

7. Trouble shooting. Most ATVs are equipped with a basic tool kit supplied by the manufacturer. Pliers, a screwdriver, an adjustable wrench, and a spark plug wrench should be included in the tool kit. If the tool kit does not contain those items, add what is missing before the trip. In addition to the basic tools, one should carry one or two spark plugs.
8. What follows below is a general outline of possible problems and possible solutions.

PROBLEM CHART

PROBLEM	CAUSES
Engine fails to start	1,2,3,4 and/or 6
Engine backfires	3,7 and/or 8
Engine will not idle	8,9 and/or 13
Engine starts but runs rough	3,8 and/or 13
Engine will not run manually	10
Engine lacks power or accelerations	3,4,5,8 and/or 11
Engine runs but machine will not move	12

SOLUTION CHART

	CAUSES		SOLUTIONS
1.	No fuel in tank	1.	Fill tank with properly mixed fuel.
2.	Ignition switch is off	2.	Turn switch on.
3.	Spark plug fouled	3.	Look at the color of the electrode tip. Brownish is ideal. Black means too rich carburetor mixture, incorrect fuel mixing ration, wrong spark plug (heat range) or excessive idling. Grey means too lean carburetor mixture, wrong spark plug or leaky seal. Clean or replace the plug.
4.	Clogged fuel line (dirt, ice or water)	4.	Check condition of fuel lines, filter and tank. Clean or change filter. Clean fuel tank if necessary. Add de-icer to fuel, maximum one-eighth pint per five gallons.
5.	Improper or no ignition	5.	Make sure plug wires are in place. Check spark plug condition and gap. Remove spark plug. Attach high tension lead. Touch plug seat to engine while cranking. If spark appears, spark plug and magneto are O.K. If no spark, disconnect spark plug wire from plug, then hold wire about one-eighth inch from the cylinder head while cranking. If spark appears, install new spark plug. If no spark, magneto is faulty. See your dealer.
6.	Flooded engine	6.	Disengage choke, wait 60 seconds or more. Then depress throttle fully and crank engine. RELEASE THROTTLE LEVER IMMEDIATELY AFTER ENGINE STARTS.
7.	Incorrect timing	7.	Consult dealer.
8.	Carburetor out of Adjustment	8.	Adjust carburetor (see Owner's Manual). Make minor adjustments.
9.	Idle speed too slow	9.	Increase idle speed screw setting
10.	Seized engine	10.	Contact your dealer. Seizure is a result of poor lubrication.
11.	Muffler blown/broken	11.	Patch if possible. Replace as soon as possible.
12.	Drive chain broken	12.	Assess damage; see if temporary repairs can be made.
13.	Dirty air filter	13.	Clean the air filter according to directions in the Owner's Manual.

(Nothing in this section will preclude routine maintenance in accordance with manufacturer's instructions.)

8. Pre-ride inspection. A properly conducted pre-ride inspection will minimize the chance of injury, identify damaged equipment, and preclude stranding of the operator. The pre-ride inspection checklist is designed to be used as a record and should be used before every ride. A thorough completion of the checklist will provide a good record of the maintenance, repairs, and overall condition of the ATV. The inspection checklist is divided into a double

column so you will have space to record 2 complete pre-ride inspections. Additionally, fill-in spaces are provided for you to add other items if necessary.

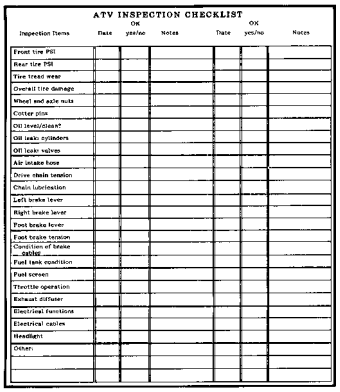
A. Performing the inspection.

1. Inspect all items listed in the “inspection items” column.

2. Note the date the items were inspected. The items should be inspected each time.

3. In the “notes” column, write some reminder comments to describe the conditions of the items inspected.

4. Inspection Form provided at end of Guide.


ATV INSPECTION CHECKLIST

Inspection Items	OK Date	OK yes/no	Notes	OK Date	OK yes/no	Notes
Front tire PSI						
Rear tire PSI						
Tire tread wear						
Overall tire damage						
Wheel and axle nuts						
Cotter pins						
Oil level/clean?						
Oil leak: cylinders						
Oil leak: valves						
Air intake hose						
Drive chain tension						
Chain lubrication						
Left brake lever						
Right brake lever						
Foot brake lever						
Foot brake tension						
Condition of brake cables						
Fuel tank condition						
Fuel screen						
Throttle operation						
Exhaust diffuser						
Electrical functions						
Electrical cables						
Headlight						
Other:						

Sample Inspection Checklist

9. “Hands-on” training exercises.

INTRODUCTION:

This practice guide has several exercises which will help you develop the skills you need to safely and enjoyably operate your ATV.

Do not attempt these exercises until you have read your owner’s manual and the ATV Training Guide thoroughly and are familiar with the location and operation of your ATV’s controls. These exercises are designed for unmodified machines with low-pressure knobby tires.

Read this guide before you start practicing.

This guide contains exercises which should be done by only one rider at a time. Keep practicing until you can do each exercise at least five times without a problem. Be sure to take a break when you get tired. Don’t push yourself; when you get tired you can make mistakes.

ABOUT YOUR ATV AND THESE EXERCISES:

Handling characteristics among ATVs vary depending upon their basic design and how they are equipped. The exercises in this practice guide apply to most ATV’s with one exception: If your ATV has a differential, be sure to lock the rear axles before practicing the exercises in this guide. Refer to your owner’s manual for instructions.

ATV’s with solid rear axles (and those with locked differentials) turn both rear wheels at the same speed. This requires that you shift your weight in a slow turn to unweight the inside wheels slightly. Since a differential allows the rear wheels to turn at different speeds, you don’t have to lift the inside wheels to turn. In fact, it is important that you don’t. If a rear wheel leaves the ground, it will spin freely. Then when it touches the ground again, it may grab and cause you to lose control.

CHOOSING A PRACTICE AREA:

Choose an open, off-road area (about 100' X 200') away from other riders and free of obstructions. The terrain should be flat for the first five exercises. For the next two you’ll need a hill. The hill should not be very steep; it should be easy to climb on foot. Practicing on a hard dirt surface will make it easier for you to learn the basic maneuvers. Do not use these exercises on pavement. ATVs are designed for off-road use only.

SAFETY RULES:

The practice exercises in this guide can be dangerous if you don't follow the instructions provided. Also, follow these safety rules:

- Wear proper protective clothing. This includes a good helmet and boots, gloves, eye protection, and a long sleeve top.
- Inspect your ATV before you begin. Consult your owner's manual.
- Check the practice area for potential hazards.
- Pay attention to additional safety tips found throughout the explanation of the exercises.

WHAT TO BRING:

Bring five objects that you can use as markers. Milk cartons or plastic bottles with sand in them work well. You should also bring a tape measure to mark distances; or at least measure your stride so you can pace off the distances. (One hundred feet equals 35 to 40 paces.)

HOW TO USE THIS GUIDE:

The guide is divided into three levels. LEVEL 1 drills cover the basics of ATV riding. If you have not been riding for very long (less than three months), you should be sure you have mastered these drills before you move to the other levels. If the terrain you are riding on has ruts and other obstacles, include Exercise 9 in Level 1 drills.

Level 1 drills are as follows:

Section 1	Controls - location and operation
Section 2	Braking - straight path
	Braking - in a turn
Section 3	Turning - large oval
	Turning - small circles
	Turning - figure 8

Level 2 drills are for practicing elementary maneuvers. All ATV riders should practice these drills before going to Level 3.

Level 2 drills are as follows:

Section 1	Sharp turns
Section 2	Quicker turns
Section 3	Climbing, turning, and descending
	Climbing, stopping and descending
	Stopping while descending

Level 3 drills are for practicing intermediate maneuvers. These drills are as follows:

Section 1	Traversing hills
Section 2	Quick stops - straight path
	Quick stops - in a turn
Section 3	Surmounting obstacles

LEVEL ONE

Section 1

CONTROLS

Objective: You must be able to locate and operate the ATV's controls without looking or hesitating. Practicing this exercise will help you maintain control of your ATV under various conditions.

Skills Control familiarization and operations.

Drill 1

Directions: Take out your owner's manual and locate your ATV's parking brake. Set the parking brake (if equipped). ATV controls very from vehicle to vehicle. Your ATV may not have all of the following controls, but familiarize yourself with the ones it has. Locate the controls as you consult your owner's manual.

Parking brake	Choke
Handlebar front brake lever	Primer
Handlebar rear brake lever	Fuel supply valve
Rear brake pedal	Clutch lever
Throttle (twist grip or thumb lever)	Foot shifter and shift pattern
Ignition switch	Transmission hi/lo lever
Headlight dimmer switch	Electric start button
Neutral indicator	Pull starter or kick starter
Engine stop switch	Reverse gear lever

Drill 2

Directions: Mount the ATV taking care not to step on the shifter. While astride the ATV, identify (i.e. physically touch and manipulate)each control. Try it without looking at the controls; keep your head looking straight ahead.

Tips:

- Make sure all the controls work properly. Use your owner's manual in order to check out the ATV
- Remember that controls vary from model to model, and you should do this exercise whenever you ride a different ATV.

Problems:	Corrections:
Use the left brake handle as a clutch.	Motorcyclists must modify old reflexes for controls and turning.
Downshifting instead of up shifting and vice versa.	Shift patters vary among ATVs. Be sure you know the shift pattern of your ATV
Trouble changing hi/lo lever or finding reverse.	Consult owner's manual. Try rocking the ATV slightly while moving the lever.
Controls seem awkward to reach.	Reposition handlebars or controls for ease of operation and check adjustments as stated in the owner's manual.

Section 2

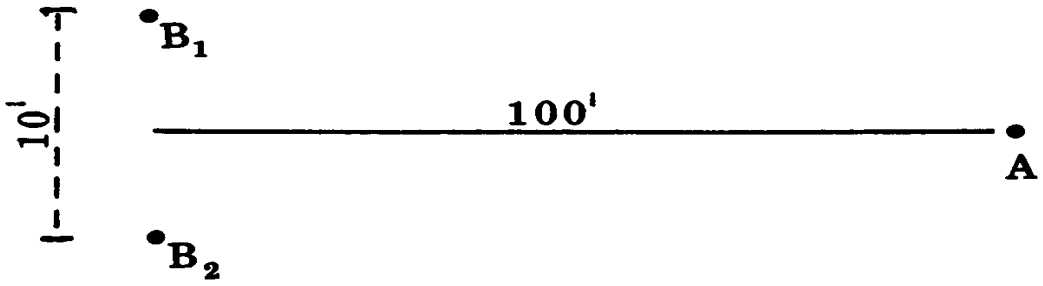
BRAKING

Objective: You must be able to put the ATV in gear, accelerate, shift smoothly and come to a smooth, safe stop. Practicing these drills will help you master stopping in a straight line and in a curve like when you stop for a rest during a trail ride.

Skills: Starting out, shifting, stopping.

Drill 1 Braking - straight path.

Directions: Put marker A down to indicate your starting point. Then place markers B1 and B2 100 feet down a straight path. Start you ATV and ride straight toward the second markers. Accelerate and shift into second. Begin to slow down and shift to a lower gear BEFORE you reach markers B1 and B2. Come to a smooth, non-skidding stop with you front tires between markers B1 and B2. Practice this a few time is second gear. Then practice in higher gears until you can stop smoothly and consistently on line B1-B2.



Level 1, Section 2 - Drill 1 Layout

Drill 2 Braking - in a turn.

Directions: Place markers C and D as indicated in the diagram. Start at marker A and ride toward B1-B2. Accelerate and shift into second. Begin to slow and shift to a lower gear as you go through B1-B2 markers. Veer left and come to a smooth, non-skidding stop with you front tires next to marker C. Practice this to the right with your front tires stopped next to marker D. As in Drill 1, practice a few times in second gear; then practice in higher gears until you can stop smoothly and consistently at markers C and D.

Level 1, Section 2 - Drill 2 Layout

Tips:

- Keep your feet on the pegs at all times.

- Keep your head and eyes up.
- Look straight ahead when stopping in a straight line. Look around the turn as you slow in the curve.
- Shift to a lower gear as you decelerate.

Problems:	Correction:
Overshooting the final marker.	Begin to slow down earlier.
ATV swerves to one side.	Don't shift your weight when stopping in a straight line.
Rear end slides or skids.	Begin to slow down earlier. Apply brake pressure more gradually.
ATV swings wide in the curve.	Steer with the handle bars. Lean in slightly. Begin to slow down earlier.

Section 3

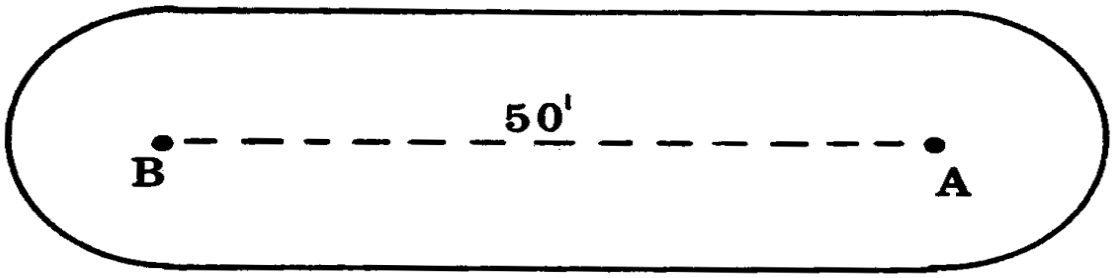
TURNING

Objective: You must be able to coordinate speed and body position to maintain balance while turning. Practicing this exercise will help you as you ride down curvy trails and fire roads.

Skills: Throttle control, shifting weight, turning, braking

Drill 1 Turning - large oval.

Directions: Place markers A and B 50 feet apart as indicated in the diagram. Ride around the outside of the markers so that you have made a large oval. Ride to the left a few times and then ride around to the right. Do not shift gears during the exercise.



Level 1, Section 3 - Drill 1 Layout

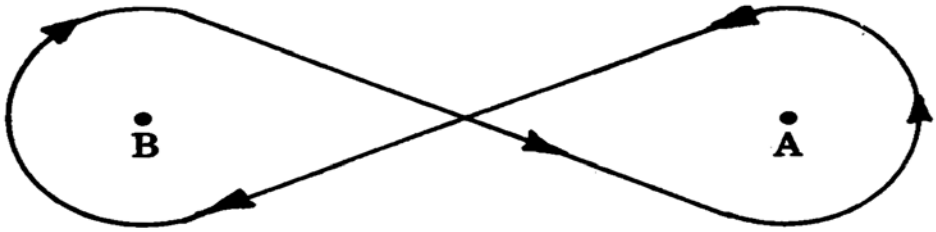
Drill 2 Turning - small circles.

Directions: Now use those same markers as the center of two large circles. Ride around marker A to the left. Continue riding around to the left and decrease the radius of the circle so that you are making tighter turns. Then ride around marker B to the right and practice decreasing your turning radius.

Level 1, Section 3 - Drill 2 Layout

Drill 3 Turning - figure 8.

Directions: Combine the circles around marker A and marker B so that you are doing a large figure 8. As your skills increase, move the markers closer together (25 feet apart) so that the figure 8 becomes smaller.



Level 1, Section 3 - Drill 3 Layout

Tips:

- Keep your feet on the pegs at all times.
- Look ahead, concentrating on your intended path of travel.
- Slow before the turn and gently increase the throttle as you exit the turn.
- Support your weight on the outer footpeg and lean your upper body into the turn.
- Turn the handlebars in the direction of the turn.
- Use lots of “body english” (leaning in radically) to help maintain balance during turns.

Problems: Corrections:

ATV tips to one side	Lean your upper body further into the turn
Front wheels plow straight ahead when you want to turn.	Put weight on outside peg as you turn the bars and increase the throttle gently. Put more weight up front.
ATV swings wide.	Slow down. Look around the turn.

LEVEL TWO

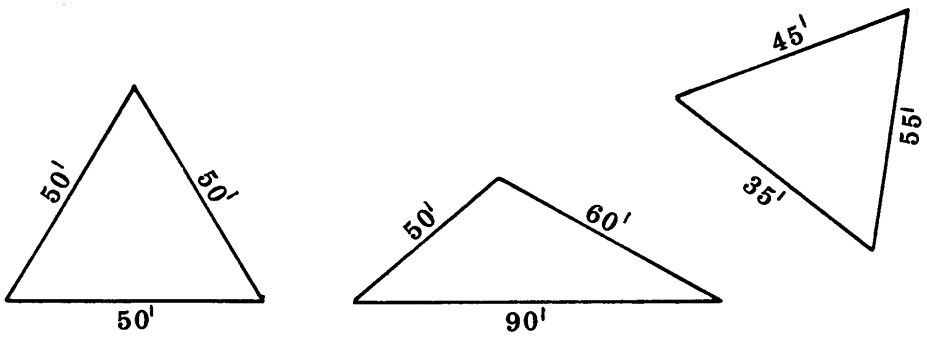
Section 1

SHARP TURNS

Objective: You must be able to maintain balance and control while making sharp turns. Practicing this exercise will help you maneuver your ATV as you would in tight wooded areas.

Skills: Shifting weight, turning, throttle control, braking.

Directions: Place three markers down to create a triangle with sides of equal length. The sides should be at least 50 feet long. Ride around the outside of the triangle, going to the left. Change the sides and angles of the triangle and practice with each new triangle.



Level Two, Section 1 - Sharp Turns Layout

- Keep your feet on the pegs at all times.
- Slow before the turn.
- Look through the turn at your intended path of travel.
- Gently increase the throttle as you exit the turn.
- Lean in and weight the outer footpeg as you enter the turn.
- Turn the handlebar in the direction of the turn.

Problems:	Corrections:
Front wheels plow and ATV goes straight.	Lean into the turn more and use the throttle to help get around the corner. Apply throttle gradually to avoid unweighting the front end. Bend your elbows and lean forward a bit to maintain weight on the front wheels.

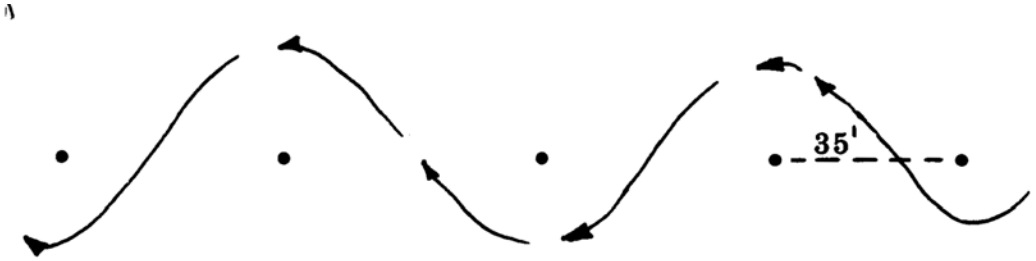
Section 2

QUICKER TURNS

Objective: You must be able to coordinate speed, body position, and balance while weaving between cones. Practicing this exercise will help you maneuver your ATV as you would while trying to avoid obstacles during a ride in an open area such as desert terrain.

Skills: Shifting weight, steering with the throttle, changing direction.

Directions: Put five markers down at 35-foot intervals. Travel to the left of the first marker and then to the right of the second and continue until you reach the last marker. Practice at slow speeds first, then gradually increase your speed. Do not exceed second gear. After you've mastered this, move the markers closer together. Do not move them closer than 18 feet apart.



Level Two, Section 2 - Quicker Turns Layout

Tips:

- Keep your feet on the pegs at all times.
- Shift your weight quickly to initiate the turn. To shift your weight effectively, rise up slightly on the pegs by flexing your thigh muscles, and "do the twist;" i.e., quickly move your hips to the inside of the turn and put your weight on the outside peg.
- To go left, apply a slight left turn to the front wheels, quickly shift your weight to the right footpeg and apply a short burst of throttle.
- Don't look at the next marker you are approaching. Look two markers ahead.

Problems:	Corrections:
You run over the markers as you try to go around.	Swing wider and shift your weight more. Use a quicker burst of throttle.

Section 3

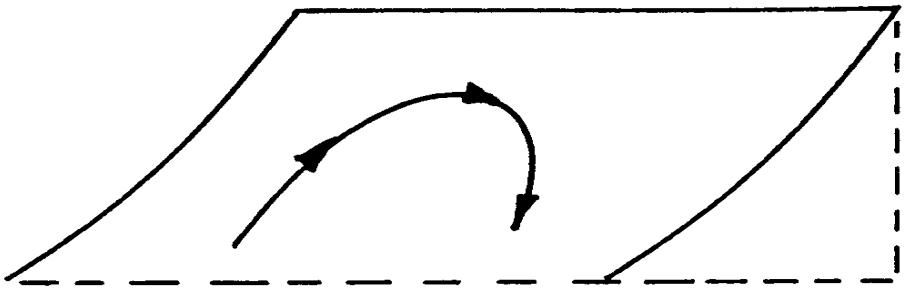
CLIMBING, DESCENDING AND STOPPING ON HILLS

Objective: You must be able to ride up, turn your ATV around, and ride down a hill. Practicing this exercise will help you if you if you lose momentum on an uphill climb.

Skills: Maintaining balance, shifting weight, application of brakes and throttle control.

Drill 1 Climbing, turning, and descending.

Directions: For this exercise, select an easy hill free of obstructions. Start your approach to the hill by accelerating before the base of the hill. Shift into a lower gear at the base and maintain momentum without accelerating to climb the hill. Turn the ATV to the right in an arc before you reach the top. Keep turning, using your remaining momentum until you are facing downhill. Descend the hill in first gear and as you descend, slow by applying the brake(s)

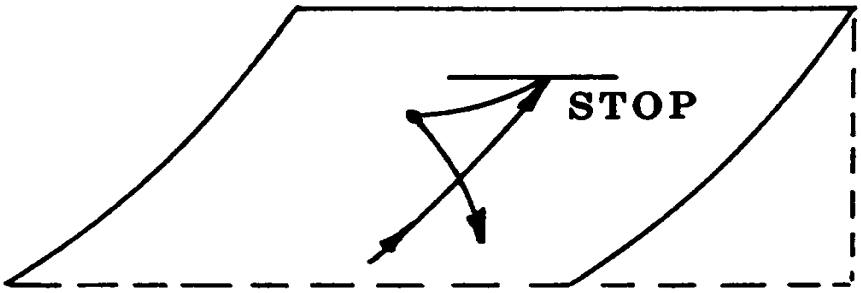


Level Two, Section 3 - Drill 1 Layout

Drill 2 Climbing, stopping, and descending.

Directions: Ride up the hill and stop by gently applying the brakes. Set the parking brake and dismount to the left. If you are physically able to do so, drag the rear end of the ATV to the left uphill. Do not stand behind the ATV, and be careful not to slip. Stand on the uphill side as you drag the rear end around so that the ATV is angled somewhat downhill. Turn the handlebars to the right. Mount the ATV again while keeping your weight into the hill (uphill). Follow the same procedure as before for descending the hill. If you cannot do this use the following alternate method.

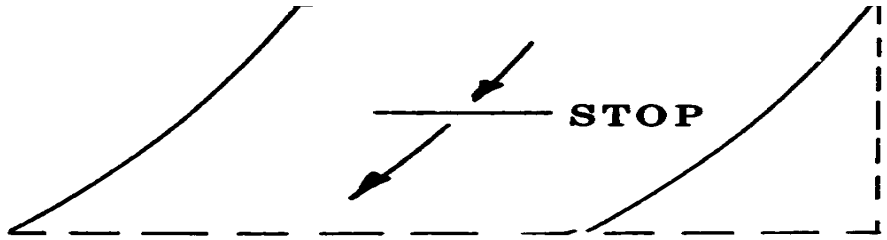
Alternate method: Ride straight up the hill and stop by gently applying the brakes. Set the parking brake and dismount on the left. Be sure your parking brake is working.



Level Two, Section 3 - Drill 2 Layout

Drill 3 Stopping while descending.

Directions: As you descend the hill, slow by gradually applying the brake(s) and then stop.



Level 2, Section 3 - Drill 3 Layout

Tips:
- Keep both feet firmly on the pegs.

Climbing:
- Shift your body weight forward by sliding forward on the seat as you go up the hill. For steep hills, stand on the footpegs and lean forward as much as possible.
- As you near the top and turn, shift your body weight to the uphill side as much as possible by leaning into the hill.

Descending:
- To go downhill, shift your weight back. On a steep downhill, straighten your knees and elbows and bend forward sharply at the waist so that your posterior hangs off the back of the seat.
- Use the brake(s) to slow you down as you descend the hill and always descend in gear.
- The key to successful performance of this exercise is to smoothly shift your weight from forward (climb) to uphill side (as you turn) and to the rear (descend). For smooth weight shifts, transfer weight to the footpegs and raise up slightly off the seat.

Problems:	Corrections:
ATV loses all momentum going up the hill.	Approach at a higher speed. Do not attempt to turn your ATV if you do not have the momentum to make the 180 degree turn. Apply the brake(s) before you lose speed. Don't let the ATV roll backward.
ATV descends too quickly.	Maintain smooth braking. Be sure you are in gear and the transmission is engaged. Do not apply the throttle whatsoever.
Wheels lock creating a slide.	Release brakes and immediately reapply more gradually.
ATV rolls backwards.	DO NOT LET THE ATV ROLL BACKWARDS. If it does, raise up on the seat, pull the handlebars into your thighs and be sure your chin is as far forward as possible BEFORE applying the brake(s) gradually.

LEVEL THREE

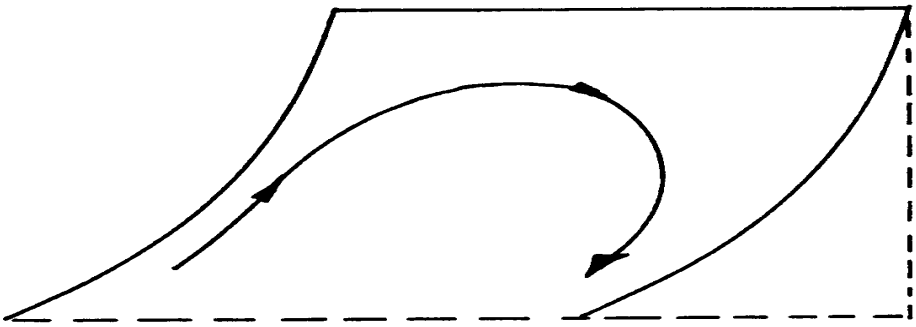
Section 1

TRAVERSING HILLS

Objective: ou must be able to ride across a hill without stalling or tipping the ATV. Practicing this will help you ride over cambered or hilly terrain.

Skills: Shifting weight, maintaining balance and throttle control.

Directions: For this exercise, select an easy hill free of obstructions. Start your approach and accelerate before the base of the hill. Shift into a lower gear and maintain a steady speed as you climb the hill. Turn the ATV to the right, ride across the slope and then ride down the hill. Repeat the exercise to the left.



Level Three, Section 1 - Traversing Hills Layout

Tips:

- Keep both feet on the pegs.
- Apply the same principles for climbing and descending as you did in the previous exercise.
- Exaggerate your weight shifts.
- If the ATV wants to turn downhill as you traverse the slope, turn the front wheels slightly uphill to keep the ATV going straight.
- Some hills are too steep for your abilities.
- Some hills are too steep for your ATV regardless of your abilities.

Problems:	Corrections:
ATV loses momentum going uphill.	Approach at a slightly higher speed.
ATV wheelies as you climb the hill.	Lean forward more; move way up on the seat or stand and position your torso over the front wheels. Don't accelerate up the slope.
ATV tips as you traverse the hill or turn.	Lean into the hill more. Move off the seat towards the uphill side. Weight the uphill peg.
Rear end slides downhill.	Weight the downhill peg.
Excessive jarring as front wheels encounter bumps on the descent.	Shift more weight to the rear. Descend more slowly.

Section 2

BRAKING (QUICK STOPS)

Objective: <u>You must be able to stop in the shortest possible distance by applying maximum brake pressure.</u> Practicing these drills will help you to be able to stop quickly should an obstacle suddenly appear in your path.

Skills: Shifting gears, stopping.

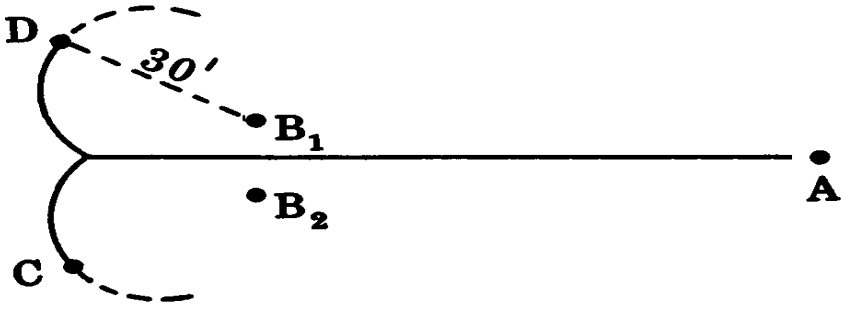
<u>Drill 1</u> Quick stops - straight path.

Directions: Start at marker A and ride toward B in second gear. When the ATV PASSES marker B, shift to first gear and stop smoothly and quickly. Notice where you stop. Put some sort of marker down there (a rock, perhaps). Do it again and stop smoothly and quickly, but in a shorter distance. Make your first two attempts in second gear and remember to shift to a lower gear and slow only AFTER you have passed the second marker. Shift to higher gears when you have mastered the exercise in second gear. Practice until you consistently can almost, but not quite, lock the wheels.

Level Three, Section 2 - Drill 1 Layout

<u>Drill 2</u> Quick stops - in a turn

Directions: Place markers C and D as indicated in the diagram. Start at marker A and ride toward B1 - B2. When you reach B1-B2, veer left and ride in second gear toward C. When you PASS marker C, downshift and apply your brake(s). Come to a quick stop and note where you stop. Put some sort of marker down. Do it repeatedly and stop smoothly and quickly, but in a shorter distance. Make your first two attempts in second gear and remember to shift to first gear and slow only AFTER you have passed marker C. Shift to third when you have mastered the exercise in second gear. Practice this to the right and stop quickly after you have PASSED marker D. *



Level Three, Section 2 - Drill 2 Layout

Tips:

- Keep your feet on the pegs at all times.
- Keep your head and eyes up.
- If you accidently lock the wheels, release the brakes momentarily and reapply the brakes more gradually.

Problems:	Corrections:
ATV swerves to one side.	Center your body on the machine.
Rear end slides or skids.	Downshift smoothly. Apply less rear brake pressure.
Front end slides or skids.	Apply less front brake pressure.

*Note: It is best to avoid excessive braking in a turn, but certain conditions may require you to brake while in a turn.

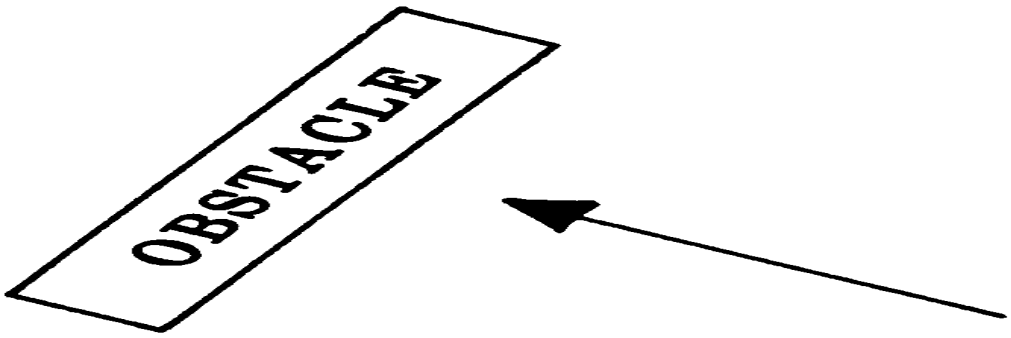
Section 3

SURMOUNTING OBSTACLES

Objective: You must be able to cross an obstacle by choosing the proper approach path and by standing on the pegs. Practicing this exercise will help you maneuver the ATV over obstacles which you cannot avoid such as logs which cross your path.

Skills: Surmounting obstacles.

Directions: Approach the obstacle at walking speed and at as close to a 90 degree angle as possible. Rise up slightly on the footpegs, pull up on the handlebars and apply a small amount of throttle as the front wheels reach the obstacle. Lean forward and release the throttle after the front wheels clear the obstacle.



Level Three, Section 3 - Surmounting Obstacles Layout

Tips:

- Be sure to bend your elbows and knees so that you can use them as shock absorbers.
- Whoop-de-do's, mounds, and deep ruts all act as obstacles. Be sure to stand up on the pegs for each.
- If only one rear wheels goes over the obstacle, be prepared to shift your weight and maintain balance as the ATV tips to one side.

Problems: Corrections:

Excessive jarring from impact.	Bend knees and arms more.
ATV fails to continue straight over the obstacle; i.e., as front wheels clear, the ATV turns to one side.	Keep a firm grip on the handlebars (even though your arms are bent) to keep the ATV pointed straight ahead.
Front wheels push the obstacle rather than crossing over it.	In addition to pulling up on the handlebars, apply a small amount of throttle as the front wheels meet the obstacle. Release the throttle as soon as the front wheels have surmounted the obstacle.
Rear wheels hit the obstacle with excessive impact.	Lean forward slightly once the front wheels have gone over the obstacle in order to unweight the rear wheels. The throttle must be released before the rear wheels hit.

ATV INSPECTION CHECKLIST

INSPECTION ITEMS	DATE	OK	NOTES	DATE	OK	NOTES
Front tire PSI						
Rear tire PSI						
Tire tread wear						
Overall tire damage						
Wheel and axle nuts						
Cotter pins						
Oil level/clean ?						
Oil Leak: cylinders						
Oil leak: valves						
Air intake hose						
Drive chain tension						
Chain lubrication						
Left brake lever						
Right brake lever						
Foot brake lever						
Foot brake tension						
Condition of brake cables						
Fuel tank condition						
Fuel screen						
Throttle operation						
Exhaust diffuser						
Electrical functions						
Electrical cables						
Headlight						
Other:						